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EXAMINER
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STAHL, MICHAEL J

ART UNIT	PAPER NUMBER
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2874

DATE MAILED: 09/09/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

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**Office Action Summary**

Application No.

10/785,619

Applicant(s)

LOOK, CHRISTOPHER M.

Examiner

Mike Stahl

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**– The MAILING DATE of this communication appears on the cover sheet with the correspondence address –**  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-19 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-19 is/are rejected.
- 7) ☒ Claim(s) 10,12,13,15,16 and 18 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 23 February 2004 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |  |
|--|--|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. ____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)            |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>1/13/05</u> . | 6) <input type="checkbox"/> Other: ____  |

### ***Drawings***

Figure 3C is objected to because in decision block 344, “laser” should be changed to “transceiver”. See the description at [0042]. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as “amended”. If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either “Replacement Sheet” or “New Sheet” pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

### ***Claim Objections***

Claims 10, 12-13, 15-16, and 18 are objected to for the following informalities.

In claim 10, line 2, “demultiplexors” should be changed to “demultiplexers”.

In claim 10, line 5, “demultiplexors” should be changed to “demultiplexers”.

In claim 12, line 2, “multiplexers” should be changed to “multiplexers”.

In claim 12, line 6, “demultiplexer” should be “multiplexers”.

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In claim 13, line 11, "demultiplexers" should be changed to "demultiplexers".

In claim 15, line 2, "multiplexers" should be changed to "multiplexers".

In claim 16, line 14, "demultiplexers" should be changed to "demultiplexers".

In claim 18, line 2, "multiplexers" should be changed to "multiplexers".

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-2 and 8-9 are rejected under 35 U.S.C. 102(b) as being anticipated by Anthony et al. (US 5970201).

Claim 1: Anthony discloses a method including: diverting a predetermined portion (via taps 25-28) of each of a plurality of optical signals to a plurality of photonic detectors 29-32 within a first optical node; and detecting the plurality of signals with the detectors, such that each detector detects one of the plurality of optical signals. See fig. 3.

Claim 2: The method further includes: adjusting a power level (via variable attenuators 17-20) of each of the plurality of optical signals after diverting the predetermined portions (col. 4 lns. 57-64).

Claim 8: Anthony discloses an apparatus including: a switch fabric **16** to connect different ones of a first plurality of ports of the fabric with different ones of a second plurality of ports of the fabric; a plurality of photonic detectors **29-32** to detect the presence or absence of an optical signal; and a tap **25-28** optically coupling each of the photonic detectors to a different one of the second plurality of ports.

Claim 9: The apparatus further includes: a variable optical attenuator **17-20** optically coupled to the tap.

Claims 1-6, 8-9, and 11 are rejected under 35 U.S.C. 102(e) as being anticipated by Koh et al. (US 6801679).

Claim 1: Koh discloses a method including: diverting a predetermined portion (via taps **34**) of each of a plurality of optical signals to a plurality of detectors **62** (via couplers **48**) within a first optical network node; and detecting the plurality of signals using the plurality of detectors such that each detector detects one of the optical signals (figs. 1A-2B).

Claim 2: The method further includes: adjusting a power level (via variable attenuators **210**) of each of the plurality of optical signals after diverting the predetermined portions (fig. 7; col. 12 lns. 25-33).

Claim 3: The method further includes: demultiplexing by wavelength a plurality of incoming optical signals to the first optical network node from a second optical network node to generate one of the plurality of optical signals from each of the plurality of incoming optical signals. Note Demux **236** in figs. 12A and 12C. The VOA **210** and VOS **220** correspond to

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those of fig. 7. Use of the invention for communication between network nodes is mentioned e.g. at col. 4 ln. 3 – col. 6 ln. 36).

Claim 4: The method further includes multiplexing the plurality of optical signals to generate a plurality of outgoing optical signals after adjusting the power level of each of the plurality of optical signals. Note the multiplexer **230** of fig. 8 or **238** of fig. 12C.

Claim 5: The plurality of signals includes a plurality of optical signals generated by a plurality of light sources in a plurality of optical transceivers of the first optical network node in response to a plurality of electrical signals. Note the Add channels in fig. 12C or fig. 9.

Claim 6: The method further includes issuing an alarm if one of the plurality of photonic detectors detects a failure of one of the plurality of optical signals (col. 4 lns. 56-61).

Claim 8: Koh discloses an apparatus including: a switch fabric **250** to connect different ones of a first plurality of ports of the fabric with different ones of a second plurality of ports of the fabric; a plurality of photonic detectors (located in **220**, see fig. 7) to detect the presence or absence of an optical signal; and a tap **34** optically coupling each of the photonic detectors to a different one of the second plurality of ports. See fig. 12C.

Claim 9: The apparatus further includes a variable optical attenuator **210** optically coupled to the tap.

Claim 11: The apparatus components including the switch fabric, photonic detectors, tap, and variable optical attenuator are all on the same die (col. 19 lns. 15-17 and 47-59).

Claims 1-6 are rejected under 35 U.S.C. 102(e) as being anticipated by Kinoshita et al. (US 2004/0208574).

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Claim 1: Kinoshita discloses a method including: diverting a predetermined portion (via taps 243) of each of a plurality of optical signals to a plurality of detectors 245 within a first optical network node 14; and detecting the plurality of signals using the plurality of detectors such that each detector detects one of the optical signals. See figs. 1, 4A, and 4B. It is noted that element 240 of fig. 4B may replace element 214 of fig. 4A ([0099]).

Claim 2: The method further includes: adjusting a power level (via variable attenuators 242) of each of the plurality of optical signals after diverting the predetermined portions ([0100]).

Claim 3: The method further includes: demultiplexing by wavelength a plurality of incoming optical signals to the first optical network node from a second optical network node to generate one of the plurality of optical signals from each of the plurality of incoming optical signals. Note the demultiplexer 206 of fig. 4B. Preceding or upstream nodes such as 12 are illustrated in fig. 1.

Claim 4: The method further includes multiplexing the plurality of optical signals to generate a plurality of outgoing optical signals after adjusting the power level of each of the plurality of optical signals. Note the multiplexer 204 of fig. 4B.

Claim 5: The plurality of signals includes a plurality of optical signals generated by a plurality of light sources in a plurality of optical transceivers of the first optical network node in response to a plurality of electrical signals. Note that channels may be added via switches 241 in the fig. 4B configuration ([0100]).

Claim 6: The method further includes issuing an alarm if one of the plurality of photonic detectors detects a failure of one of the plurality of optical signals ([0081]).

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Anthony et al. (cited above).

Claim 7: Anthony states that the tapped portion may be between 1 and 10 % (col. 2 lns. 22-23) but does not specifically mention 5 %. A person skilled in the art would have known how to select an appropriate fraction for the tap; for example, the fraction should be high enough to provide a valid signal to the photodetectors but not so high as to render the untapped signal too weak for downstream use. Thus it would have been obvious to a skilled person to have chosen a tapped portion of approximately 5 % in a given implementation of the Anthony method.

Claims 1-5, 8-10, and 12-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Alferness et al. (US 5627925) in view of Anthony et al. (cited above).

Claims 8-9: Alferness discloses an apparatus including a switch fabric **180a/220a** to connect different ones of a first plurality of ports of the fabric with different ones of a second plurality of ports of the fabric. See fig. 5. Alferness does not disclose a plurality of photonic detectors to detect the presence or absence of an optical signal and a tap optically coupling each of the photonic detectors to a different one of the second plurality of ports. Anthony as discussed above discloses a switch fabric **16**, a number of photonic detectors **29-32**, and taps **25-28** which



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couple each detector to a different output port of the fabric (fig. 3). Anthony teaches that WDM networks usually require power regulation (col. 1 lns. 8-20). Furthermore, it is known in the art to regulate the power of optical channels at different wavelengths in order to counteract the wavelength-dependent gain provided by typical optical amplifiers. A person of ordinary skill in the art would have recognized the utility of optical power regulation in the Alferness device, and thus would have found it obvious to have modified the Alferness device by adding taps (such as 25-28 of Anthony), detectors (such as 29-32 of Anthony), and variable attenuators (such as 17-20 of Anthony) to the outputs of the switch fabric 220 in order to realize a power regulation mechanism. The proposed combination would have met the limitations of claims 8 and 9.

Claim 10: The Alferness device further includes: a plurality of wavelength demultiplexers 120a-M each having an input to receive an incoming optical signal from an optical fiber, wherein each of the optical signals is capable of including one or more wavelengths, wherein each of said plurality of wavelength demultiplexers includes a plurality of outputs to carry a different one of the plurality of wavelengths  $\lambda_1$ - $\lambda_N$ , and wherein the ones of the plurality of outputs of the plurality of wavelength demultiplexers to carry the same one of said plurality of wavelengths are optically coupled to different ports of the first plurality of ports.

Claim 12: The Alferness device further includes: a plurality of wavelength multiplexers 160a-M each having an output to provide an outgoing optical signal to an optical fiber, wherein each of the optical signals is capable of including one or more wavelengths, wherein each of said plurality of wavelength multiplexers includes a plurality of inputs to carry a different one of the plurality of wavelengths  $\lambda_1$ - $\lambda_N$ , and wherein the ones of the plurality of inputs of the plurality of

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wavelength multiplexers to carry the same one of said plurality of wavelengths are optically coupled to different ports of the second plurality of ports.

Claims 13-15: The Alferness apparatus modified as proposed above with respect to claim 8 constitutes an optical network node which has all the limitations of claims 13-15. Each wavelength layer of fig. 5 (e.g. for  $\lambda_i$ ) including the fabric **180i/220i** and the proposed detectors and taps and variable optical attenuators for that layer, may be regarded as a wavelength switch module. Demultiplexers **120** and multiplexers **160** were previously discussed.

Claim 16: The modified Alferness apparatus as described above with respect to claim 13 forms a first optical network node. Alferness teaches that the node is used in an optical network including a plurality of optical fibers (col. 2 lns. 14-16; fig. 2).

Claims 17-18: The limitations of these claims are met by the modified Alferness system in parallel to claims 14 and 15 as covered above.

Claim 19: The system includes a second optical network node coupled to the first optical network node via the optical network, to send the incoming optical signal to the first optical network node. For example, the modified fig. 5 apparatus embodies one of the nodes **10** in fig. 2 and is optically networked with other nodes.

Claims 1-5: The process of operating the Alferness device modified as proposed above with respect to claim 8 meets the limitations of claims 1-5.

### ***Conclusion***

Unapplied references US 6332055 and US 5867289 are cited on the attached PTO-892 form and are considered relevant to this application.


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Inquiries about this letter should be directed to Mike Stahl at 571-272-2360. Inquiries of a general or clerical nature (e.g., a request for a missing form or paper, etc.) should be directed to the technical support staff supervisor at 571-272-1626. Official communications which are eligible for submission by facsimile and which pertain to this application may be faxed to 571-273-8300. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

MSS

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August 24, 2005



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